REMARKS

This paper is in response to the official action dated December 29, 2004 (hereafter, "the official action").

By the foregoing amendments, claims 1, 10, 29, 42, and 51 have been amended, and claims 2 and 43 have been canceled. Claims 1 and 42 have been amended to recite the limitations of claims 2 and 43, respectively. Claims 10, 29, and 51 have been amended to correct typographical errors. No new matter has been added.

Claims 1, 3-6, 9-25, 28-42, 44-47, and 50-67 are pending and remain at issue.

Claims 1, 9, 10, 15-21, and 62 have been rejected under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 5,739,545 to Guha *et al.* ("Guha"). Claims 42, 50, 51, 56-61, and 64 have been rejected under 35 U.S.C. §103(a) as obvious over U.S. Patent No. 5,698,740 to Enokida *et al.* ("Enokida") in view of Guha.

Furthermore, all pending claims 1, 3-6, 9-25, 28-42, 44-47, and 50-67 have been rejected for obviousness-type double patenting in view of claims 1-22 of U.S. Patent No. 6,707,248 and claims 1-20 of U.S. Patent No. 6,765,350.

Additionally, claims 10, 29, and 51 have been objected to because of typographical errors. Claims 10, 29, and 51 have been amended to correct the typographical errors, and therefore these objections have been overcome and should be withdrawn.

The various bases for the claim rejections are addressed below in the order presented in the official action. Reconsideration of the application, in view of the foregoing amendments and the following remarks, is solicited.

CLAIM REJECTIONS

I. 35 U.S.C. §102(b) rejections

Claims 1, 9, 10, 15-21, and 62 have been rejected under 35 U.S.C. §102(b) as anticipated by Guha. The applicants respectfully traverse the rejections.

It is well-established that each and every limitation of a claimed invention must be present in a single prior art reference in order for anticipation to occur. *See*, for example, *C.R. Bard, Inc. v. M3 Systems, Inc.*, 157 F.3d 1340, 1349 (Fed. Cir.

1998). The standard for anticipation is one of strict identity. This standard has not been satisfied with respect to claims 1, 9, 10, 15-21, and 62, as presented herein.

Guha discloses organic light-emitting diodes including a transparent cathode structure. The transparent cathode structure "consists of a thin film of a low work function metal (such as calcium) covered by a wide bandgap semiconductor (such as ZnSe)." *See* Guha at column 1, lines 58-60. The thin film of work function metal is in direct contact with a portion of the electroluminescent layer. *See, e.g.*, Guha abstract and Figures 2 and 3. The patentee explained that "[t]he wide bandgap semiconductor protects both the organic films [of the organic electroluminescent layer] and the low work function (and reactive) metal film during subsequent deposition of other materials such as ITO, which can be added to increase lateral conductivity. The thin metal film determines the electron injection efficiency and prevents the ZnSe from diffusing into the organic electroluminescent layer." *See* Guha at column 1, line 63 – column 2, line 2.

Claims 1, 9, 10, and 15-21

Guha does *not* disclose or suggest an opto-electrical device comprising a cathode electrode including a first layer comprising a compound of a group 1 metal or a group 2 metal, as recited by claims 1, 9, 10, and 15-21. Rather, Guha discloses a cathode structure including a layer of a wide band gap semi-conductor material, which is not a 'compound of a group 1 metal or a group 2 metal,' as recited by claims 1, 9, 10, and 15-21.

Guha discloses that "[w]ide band gap semiconductors from the family of compounds constituted from column two and column six elements of the periodic table are suitable for use in the OLED's of the invention." *See* Guha at column 3, lines 44-47. With respect to the proper interpretation of this disclosure, the applicants respectfully submit that each example of a wide band gap semiconductor material is a column 2B *transition metal* compound, not a compound of a group 1 metal or a group 2 metal, as recited by claims 1, 9, 10, and 15-21. For example, Guha only discloses ZnSe, ZnS, and ZnS_xSe_{1-x} compounds as exemplary wide band gap semiconductor materials constituted from column two and column six elements of the periodic table. Guha therefore does not disclose a compound of a group 1 metal or a group 2 metal, as recited by claims 1, 9, 10, and 15-21. In view of same, the applicants respectfully

submit that a person of ordinary skill would merely be taught to use a layer comprising a column 2B transition metal compound in order to protect the underlying low work function metal.

Moreover, Zn is a member of column 2B of the periodic table, and Se and S are members of column 6A of the periodic table, as shown in the attached periodic table (attached hereto as Attachment A). Therefore, the applicants submit that the wide band gap semiconductor materials of Guha are properly limited to compounds comprising transition metals selected from column 2B and elements from column 6A.

Furthermore, Guha does not disclose or suggest that an opto-electrical device comprising a cathode electrode including a first layer comprising a compound of a group 1 metal or a group 2 metal, a second layer comprising a material having a work function below 3.5 eV, and a third layer spaced from the opto-electrically active region by the first and second layers and having a work function above 3.5eV, wherein the first layer is spaced from the opto-electrically active region by the second layer, exhibit improved optical and electronic properties relative to prior art cathode structures, as shown for example in Figure 7.

For the foregoing reasons, the applicants respectfully submit that the anticipation rejections of claims 1, 9, 10, and 15-21 have been overcome and should be withdrawn.

Claim 62

Guha does *not* disclose or suggest an opto-electrical device comprising a cathode electrode including a first layer comprising a compound of a group 1 metal, a group 2 metal, or a transition metal, *wherein the compound is a metal halide or a metal oxide*, as recited by claim 62. Rather, as previously stated, Guha merely teaches the use of compounds comprising transition metals selected from column 2B and elements from column 6A such as ZnS and ZnS_xSe_{1-x}.

Although Guha discloses that ZnSe can be doped with Cl atoms using thermally evaporated $ZnCl_2$, *Cl doped ZnSe does not constitute a metal halide.* Rather, the crystal structure remains that of ZnSe, and Cl atoms are intercalated into the crystal structure. Moreover, Cl doped ZnSe has different physical and chemical properties relative to metal halides, and is not a metal halide as the term is used in the art.

For the foregoing reasons, the applicants respectfully submit that the anticipation rejections of claim 62 has been overcome and should be withdrawn.

II. 35 U.S.C. §103(a) rejections

Claims 42, 50, 51, 56-61, and 64 have been rejected under 35 U.S.C. §103(a) as obvious over Enokida in view of Guha. The applicants respectfully traverse the rejections.

A *prima facie* case of obviousness must satisfy three legal requirements. *First*, there must be some suggestion or motivation, either in the references themselves, or in knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. *Second*, there must be a reasonable expectation of success. *Third*, the prior art reference (or references when combined) must teach or suggest all of the claim limitations. *See* M.P.E.P. §2143. These criteria have not been satisfied with respect to pending claims 42, 50, 51, 56-61, and 64 for the reasons provided above.

The deficiencies of Guha have been addressed above. Enokida does not remedy any of these deficiencies. For example, with respect to claims 42, 50, 51, and 56-61, Enokida does not disclose or suggest an opto-electrical device comprising a cathode electrode including a first layer comprising a compound of a group 1 metal or a group 2 metal. Similarly, with respect to claim 64, Enokida does *not* disclose or suggest an opto-electrical device comprising a cathode electrode including a first layer comprising a compound of a group 1 metal, a group 2 metal, or a transition metal, wherein the compound is a metal halide or a metal oxide.

For the aforementioned reasons, the applicants respectfully submit that the obviousness rejections of claims 42, 50, 51, 56-61, and 64 have been overcome and should be withdrawn.

III. Obviousness-type Double Patenting

All pending claims 1, 3-6, 9-25, 28-42, 44-47, and 50-67 have been rejected for obviousness-type double patenting in view of claims 1-22 of U.S. Patent No. 6,707,248 and claims 1-20 of U.S. Patent No. 6,765,350. The double patenting rejections should be withdrawn because they have been rendered moot by the terminal disclaimers relative to U.S. Patent Nos. 6,707,248 and 6,765,350 filed concurrently herewith.

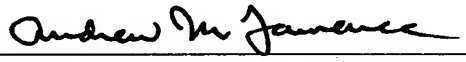
CONCLUSION

It is respectfully submitted that this application is now in condition for allowance. Should the examiner wish to discuss the foregoing, or any matter of form or procedure in an effort to advance this application to allowance, he is respectfully invited to contact the undersigned attorney at the indicated telephone number.

Respectfully submitted,

MARSHALL, GERSTEIN & BORUN LLP

March 29, 2005



Andrew M. Lawrence, Reg. No. 46,130
Attorney for Applicants
6300 Sears Tower
233 S. Wacker Drive
Chicago, Illinois 60606-6357
(312) 474-6300